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CASE NO. 81-746 and 81-1172

In The

SUPREME COURT OF THE UNITED STATES

October Term, 1982

CITY OF AKRON, ET. AL.,

Petitioners

— vs —

AKRON CENTER FOR REPRODUCTIVE HEALTH, ET. AL.

Respondents

PETITION FOR WRIT OF CERTIORARI FOR THE SIXTH CIRCUIT COURT OF APPEALS

BRIEF AMICUS CURIAE FOR LAWYERS FOR LIFE

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QUESTIONS PRESENTED

1. UPON WHAT BASIS CAN A STATE ACT IN ORDER TO PROTECT THE "ALPHA"?(*)

2. HOW CAN THE STATE'S INTEREST IN PROTECTING ALPHA THROUGH LEGISLATION BE RECONCILED WITH THE RIGHT OF PRIVACY INVOLVED IN TERMINATING A PREGNANCY?

(*) "Alpha" is a term that has been suggested as a neutral and unemotional way of referring to the developing biological entity within a woman's body during pregnancy. This term is used throughout this Brief. (See Nathanson, within, 178-9.)

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INTEREST OF AMICUS CURIAE

Lawyers for Life is an association of attorneys in Ohio who are dedicated to promoting respect for every human life. Formally begun in 1975, our organization has worked diligently to protect the rights of pregnant women and their unborn offspring.

Our members have represented unwed pregnant mothers in their legal efforts to obtain the necessary support and maternal expenses from the fathers of their yet-to-be-born babies. We have worked with other groups who provide counseling and assistance to pregnant women and their families. We have provided legal materials and expert testimony to both local and state legislative bodies on such issues as euthanasia, abortion, infanticide, the legal definition of death, and the rights of pregnant women. Our members have also been active in the courts, both State and Federal. We have provided expert

witnesses, argumentation, and legal briefs to assist the courts in their decision on these life issues. All of this legal work is done without charge to anyone. None of our members receive any payment for their work.

Our organization is particularly concerned with this present litigation before this Court. Any decision by this Court will have a profound impact upon the activities of our members and their efforts to assist pregnant women and their offspring. The quality of medical care as well as the medical advice and counseling that our clients will receive will also be affected by what this Court does. Finally, no one can deny the leadership role of this Court in shaping the legal and medical standards of our nation in dealing justly with the rights of the pregnant woman and the developing life she carries within. For these reasons we file this brief.[1]

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[1] The parties have consented to our filing this amicus brief. Pursuant to Rule 42(2) we are filing their letters with the Clerk of this Court.

INTRODUCTION

This case, City of Akron, et al, vs. Akron Center for Reproductive Health, et al, concerns an extensive ordinance passed by the City of Akron relating to pregnancy terminations. This Akron case raises the general question of the rights and interests of a State and its sub-divisions to legislate on abortion, especially those performed during the first trimester of alpha's existence. The Akron case shares this general question with two other cases now before this Court, that is, Planned Parenthood v. Ashcroft (81-1255 and 81-1623) and Simopoulos v. Virginia (81-185).

The position and argument of Lawyers for Life in this case can be summarized as follows. The alpha does have a value which can be and should be protected by law. As our scientific knowledge about alpha increases and as medical capabilities multiply to provide for alpha, correspondingly both the duty and the power of

the State to protect alpha are enlarged. While such protection is now subject to the right of privacy involving an abortion, the Supreme Court's decisions of Roe v. Wade, 410 U.S. 113 (1973), and Doe v. Bolton, 410 U.S. 179 (1973), should not be interpreted to foreclose the State's concerns about alpha. How a State might legislate to protect alpha while at the same time respecting the reproductive rights of women will be addressed in the latter part of this brief.

ARGUMENT

I. AS SCIENTIFIC KNOWLEDGE ABOUT ALPHA INCREASES AND AS MEDICAL CAPABILITIES TO PROVIDE FOR ALPHA MULTIPLY, CORRESPONDINGLY THE POWER OF THE STATE TO PROTECT ALPHA SHOULD BE ENLARGED.

During the Roe case, the Defendant State made the argument that laws prohibiting abortion could be justified on the basis of when life begins. This Court responded as follows:

> Texas urges that, apart from the Fourteenth Amendment, life begins at conception and is present throughout pregnancy, and that, therefore, the State has a com-

> pelling interest in protecting that life from and after conception. We need not resolve the difficult question of when life begins. When those trained in the respective disciplines of medicine, philosophy, and theology are unable to arrive at any consensus, the judiciary, at this point in the development of man's knowledge, is not in a position to speculate as to the answer. (Emphasis supplied.) 410 U.S. at 159, 93 S.Ct. at 730.

While then finding that a State could not override the rights of a pregnant woman by adopting one theory of life over another, the Court did declare that the State still had an "important and legitimate interest in protecting the potentiality of human life" in addition to the State's interest in protecting the woman's health. (410 U.S. at 162, 93 S.Ct. at 731.)

The Court concluded that this State interest became compelling at the point when alpha became "viable." The problem with the concept of viability has been pointed out by a number of commentators. "The concept is fluid," writes Dr. Bernard Nathanson, M.D., "and is constantly being pushed backward." (Nathanson, M.D., Bernard, Aborting America (New York: Doubleday & Company,

Inc., 1979), p. 208.) On the other hand, and this is the crucial idea, the Court has tied the State's power to protect alpha with the development of man's knowledge. Furthermore, Roe suggested, by its definition of "viability," that the State's power to prohibit abortion, depended upon medical science's capabilities to help alpha live outside the womb. "Viable," according to the Court, meant when alpha was "potentially able to live outside the mother's womb, albeit with artificial aid." (Emphasis supplied, 410 U.S. at 160, 93 S.Ct. at 730.) (2)

What, then, has science learned about alpha since the Court's 1973 decisions? What new capabilities has medicine discovered for

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(2) The decision, Colautti v. Franklin, 439 U.S. 379, 99 S.Ct. 675 (1979), tends to undercut some of this analysis. While the majority's concern about problems of "vagueness" and "scienter" in Colautti are understandable, what seems to be missing is a recognition of the State's interest in safeguarding human life. When the physician decides to perform an abortion and alpha could survive, it hardly seems unreasonable for the State to provide a strong zone of protection around alpha, assuming little or no risk to the woman.

treating alpha?

Answers to these questions can be found in Dr. Bernard Nathanson's book which has already been cited. In addition, another reason for why this Court as well as others involved in the abortion controversy should examine what Dr. Nathanson has to say is because of his immense experience in this area. A prominent obstetrician-gynecologist in New York City, the only doctor among those who originally founded and ran the National Association for Repeal of Abortion Laws (N.A.R.A.L.), and one-time Director of the largest abortion clinic in the Western world, Dr. Nathanson sums up his present views in these words:

> There are 75,000 abortions in my past medical career, those performed under my administration or that I supervised in a teaching capacity, and the 1,500 that I have performed myself. The vast majority of these fell short of my present standard that only a mother's life, interpreted with appropriate medical sophistication, can justify destroying the life of this being in inner space [the alpha] which is becoming better known to us with each passing year. I now regret this loss of life. I thought the abortions were right

> at the time; revolutionary ethics are often unrecognizable at some future, more serene date. The errors of history are not recoverable, the lives cannot be retrieved. One can only pledge to adhere to an ethical course in the future. (Nathanson, at 248-9.)

What brought Dr. Nathanson to a deeper understanding about abortion? His earlier abortion crusade had been built upon his experiences. "I had been terribly disturbed by the injustice and hypocrisy of the '60's, the disparity between rich and poor...," he states, "I had seen the victims of self-abortion and hack abortionists." (Nathanson, at 161.)

At the same time of the Roe and Doe decisions in 1973, for whose rulings Dr. Nathanson and others had so diligently labored, he supervised the establishment of a sophisticated perinatology unit at Woman's Hospital in New York city. Here he used advanced medical equipment and fetal electronic heart monitoring machines. "What began to erode the N.A.R.A.L. dogmas," writes Dr. Nathanson, "was the daily realization of the 'intrauterine patient' that we were treating,

tracing, sampling, and observing through electric monitoring or the flickering images on an ultrasonic screen." (Nathanson, at 161.)

The alpha as a "patient" is a new concept absent so far from the Court's decision. "One of the great underreported medical revolutions of our time is this field of perinatology, the intensive investigation and treatment not only of the newborne baby but of the fetus...." (Nathanson, at 160.) At the same time that abortions have multiplied in the past decade, there has been an explosion of knowledge about alpha and the latter's intrauterine existence. In 1976 alone three English-language journals began publication, specializing in fetal research: Monographs in Fetal Physiology, Reviews in Perinatal Medicine, and, the best-known, Perinatal Medicine. (Nathanson, at 160.)

All of this had an impact upon Dr. Nathanson's abortion views:

> This evolution of my thinking will sound incredible to many. I was generally aware of these biological developments

> during the years of my abortion crusade. Three things happened. First, I reflected again on the older knowledge in perinatology. Second, new data were reported all the time. Third, and most important, I opened myself up to the data. When one is caught up in a revolutionary fervor, one simply does not want to hear the other side and filters out evidence without realizing it. (Nathanson, at 161.)

It is not possible in this brief to review all of the new information that science has provided us on alpha. In one chapter of his book, Dr. Nathanson does furnish an excellent summary of what we now know. This has been reproduced as Appendix 1 and attached to this brief. The following paragraph from the Appendix does give us a view of alpha near the end of the first trimester which may conflict with our older idea of a relatively inert unintegrated entity:

> By the twelfth embryological week, when brain structure is essentially complete, alpha is spontaneously able to kick its legs, turn its feet, curl and fan its toes, move its thumbs, make a fist, bend its wrists, turn its head, squint, frown, open its mouth, suck its thumb, swallow amniotic fluid, and make inhaling-exhaling motions (though air, of course, is not inhaled until birth.) (Nathanson, at 201.)

Besides this new knowledge, science has been able to push back significantly the time at which alpha may be born and survive, though, of course, with artificial aid. In Roe, the Court had placed viability at about seven months or 28 weeks, but the Court did admit it might occur earlier, even at 24 weeks. (410 U.S. at 160, 93 S.Ct. at 730.) Actually, the more correct measure is not so much weeks, but "that all discussion of viability and survival rates must be based upon weight in grams...." (Nathanson, at 208.) Thus 28 weeks, the Court's criterion in Justice Blackmun's decision, is equivalent to 1,000 grams weight for alpha. By the time of Dr. Nathanson's book only six years after Roe, substantial changes had occurred:

> ....Blackmun's "viability" figures have essentially vanished at St. Luke's Hospital Center, where I practice. During 1977, six of nine infants admitted to the Special Care Nursery in the 751-1,000 gram category survived, a 66.7 per cent rate. One of the five in the 501-750 gram category lived, a 20 per cent survival rate. (Nathanson, at 212.)

Advances continue and the concept of viability

becomes essentially a measure of our medical technology rather than any intrinsic reflection of alpha.

If the Roe and Doe decisions are indeed based upon our scientific knowledge and capabilities regarding alpha, then the courts must be willing to re-examine their conclusions of law in light of the expanding information medicine now possesses. This may well result in the drawing of new lines as well as recognizing the legitimacy of the State's concern and interests in protecting alpha even in situations involving the right to privacy and abortion. Any other approach to the relationship between law and humanity's developing knowledge and capabilities threatens not only the adaptability of our legal system, but also contributes to the further erosion of our traditional respect for the paramount value of human life. This respect can only be maintained if our society and courts safeguard human life, even at the penumbra, whether in the alpha at the very beginning, or at edge of death, or weighed

down by some crushing disability or handicap.

II. SO LONG AS STATE LEGISLATION PROTECTING ALPHA DOES NOT UNDULY LIMIT THE RIGHT OF PRIVACY INVOLVED IN ABORTION, SUCH LEGISLATION SHOULD NOT BE STRUCK DOWN AS UNCONSTITUTIONAL.

In the Akron case, as well as in the other two cases of Planned Parenthood v. Ashcroft and Simopoulos v. Virginia, this Court is confronted with both State and local legislation affecting the performance of abortions. Our brief proposes that this Court consider each of the challenged provisions in light of our expanding knowledge of alpha and our growing abilities to treat alpha as a "medical patient." Our position, as suggested by Dr. Nathanson, is that Roe and Doe are meant to protect a right of privacy, not to mandate recognition of someone's right--whether the pregnant woman or the attending physician--to a dead alpha.

Thus if an abortion can be performed, freeing the woman of a troubling pregnancy, without causing

alpha's death, then there appears to be no reason why a State could not provide legal protection to assist alpha in surviving. This assumes, of course, that such an abortion procedure results in no unreasonable harm or risks to the pregnant woman. Given the increasing medical capability to care for alphas, the State would be able to protect them at an earlier and earlier stage in their development.

Certainly, in order to help these "viable" alphas to survive, a second doctor as well as the necessary technological equipment must be available. The transplanting of organs from a "dead" patient to a recipient is an analogous situation in which the donor's medical team is separate from the recipient's. The abortion situation involving a "viable" fetus presents similar considerations.

It must be conceded, however, that most abortions today involve alphas for whom science does not yet have the technology to insure survival. Are there laws which a State might pass in the interest of safeguarding alpha without at the

same time infringing upon the right of privacy established in Roe and Doe?

One way would be by requiring that the pregnant woman be provided with information about alternative ways of dealing with a problem pregnancy. With information about all the alternatives, the woman and her attending physician are in a much better position to make a decision.

Another means the State might employ to protect alpha would be to insure that the pregnant woman had sufficient knowledge about the existence and scientific attributes of alpha. Surely, the law cannot take any satisfaction in a situation where a woman terminates a pregnancy in ignorance about the qualities of alpha, only to learn of these afterward. Furthermore, for this alpha, there will be only this one opportunity for the State to protect alpha's existence through providing the pregnant woman with information which might lead to a choice to continue the pregnancy. Our laws already require in other

situations that participants be furnished with information before exercising a choice. These include borrowing money, purchasing a house, responding to police interrogation, making a plea to a criminal charge, and so on. Given the finality of abortion for this alpha, legislation mandating and specifying informed consent appears defensible if for no other reason than defending human life at its penumbra.

A further means a State could employ would be to establish minimal waiting periods between the time when a pregnant woman is informed regarding alpha and when the abortion takes place. Not only is alpha's existence protected during this period, but there is less likelihood that a decision to terminate will be undertaken in haste and without adequate time to consider all the alternatives. So long as such waiting periods do not endanger the woman's health, it is hard to understand why any would oppose these. (Some opponents of these waiting periods cite time and financial problems. Yet if these

arguments were employed in other situations of life-or-death, it is hardly likely that anyone would listen to them.)

Undoubtedly, many other arguments can and will be made on behalf of the various provisions in Akron's law regarding abortion as well as those laws of Missouri and Virginia in the pertinent cases. In no way does this brief deny the importance or truth of those arguments. Our concern is simply that this Court take cognizance of the claims and interests of alpha. Such a request is not unlike the eloquent argument urged by Mr. Justice Douglas, dissenting in Sierra Club v. Morton, 405 U.S. 727, 92 S.Ct. 1361 (1972). "Contemporary public concern," he wrote, "for protecting nature's ecological equilibrium should lead to the conferral of standing upon environmental objects to sue for their own preservation." (405 U.S. at 741-2, 92 S.Ct. at 1369.) He explained the basis for his conclusion:

> Inanimate objects are sometimes parties in litigation. A ship has a legal person-

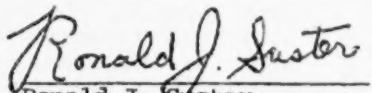
> ality, a fiction found useful for maritime purposes. The corporation sole--a creature of ecclesiastical law--is an acceptable adversary and large fortunes ride on its cases. The ordinary corporation is a "person" for purposes of the adjudicatory processes, whether it represents proprietary, spiritual, aesthetic, or charitable causes.
>
> So it should be as respects valleys, alpine meadows, rivers, lakes, estuaries, beaches, ridges, groves of trees, swampland, or even air that feels the destructive pressures of modern technology and modern life. (405 U.S. at 742-3, 92 S.Ct. at 1370.)

Surely if ecology and concern about the environment can lead us to consider bestowing standing upon both geographical features and vegetation, how much more should we be moved by modern science and medical advances to insure legal awareness and protection for alpha, that intrauterine occupant and traveler which each of us once were.

CONCLUSION

This Court should consider the interests of the alpha in reviewing abortion legislation.

Respectfully submitted,



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APPENDIX 1: Chapter 20 excerpted from Aborting America by Dr. Bernard Nathanson, with Richard N. Ostling (New York: Doubleday & Company, Inc., 1979; from edition published by Life Cycle Books, Toronto, Ontario, Canada)

SIGNALS FROM INNER SPACE

With these meretricious arguments behind us, we now turn to what abortion is really all about: What do we know about alpha, and how do we weigh its value and its claims over and against the mother's interests? Is this "human life," for instance? Human it unquestionably is, since it is organically part of the human species. "Life" also fits is we follow the common dictionary meaning (in this case, the *Random House*, unabridged): that state "manifested by growth through metabolism, reproduction and the power of adaption to environment through changes originated internally." Some anti-abortionists speak of "potential human life" as a sort of fall-back position, but I have never cared for this idea. We ought to examine actual data, rather than future potential, in coming to a decision.

To state that alpha is biologically "human life" of a certain sort does not answer our question. We must know what this means in biological detail. The following discussion only summarizes a vast and complex field of research, but I trust that it will cover the major points bearing on abortion. As techniques become more sophisticated, we will be picking up data earlier and earlier in alpha's existence, so these should be viewed as the "latest possible" point in alpha's development when things occur or become visible, under present knowledge.

A preliminary word about how the length of pregnancy is expressed. A pregnant woman talks about how many "months pregnant" she is. The obstetrician speaks of "weeks of pregnancy"; the "obstetrical weeks" are calculated from the first day of the last menstrual period, hence the synonym "menstrual weeks." However, in study of the developing human embryo the embryologist begins counting about two weeks later at ovulation or "conception," the fertilization of the egg. He typically talks of "days," but with embryological "weeks," two weeks must be added to translate each stage into "menstrual weeks." Confusingly, both embryologists and obstetricians speak of "weeks of gestation."

One of the most important new techniques for the study of alpha is ultrasonography, first described in 1958, which now does much of the work that the more hazardous X rays once performed. High-frequency sound waves are transmitted through the pregnant woman's abdomen, and the echoes are plotted to produce a visual image of alpha. Currently, the body of alpha within the amniotic sac can be seen at around six (obstetrical) weeks. Ultrasound provides an exact way to diagnose the existence of pregnancy and to determine the numbers of weeks of pregnancy. A major extension of the technique came in 1967 with the first report on realtime scanning, which transmits continuous impulses that are decoded to produce a moving image of alpha on a TV screen. The bedside console commonly in use today looks like one of those battery-operated portable TV sets that campers and boaters purchase. Research laboratories have more refined equipment. Realtime scanning allows us to study motor activity in the uterus, not only alpha's movement of arms and legs, but the pulsation of its heart and the movements of respiration. Another advance came in 1974: gray-scaling, which provides a more detailed depiction of alpha's body on the screen by more complex sonic emissions.

Another promising new technique is fetoscopy, a term that was established in 1974 following the first concentrated research in the early '70s. As with ultrasonography, it is applied both to establish the existence of defects (biochemical as well as physical) that might lead the mother to choose abortion, and also as a tool for diagnosis of alpha

as the patient, to help it survive. In fetoscopy, alpha is seen directly by use of a fiberoptic endoscope thrust into the pregnant uterus through the woman's abdomen. The best images for visual examination in early pregnancy are obtained at sixteen weeks, according to research done on 211 alphas at Toronto General Hospital during 1973-77.

Amniocentesis, now well known to women, is a procedure in which amniotic fluid is withdrawn in order to grow a culture for diagnostic analysis from cells that have flaked off of alpha's body into the fluid. Fetoscopy offers an improvement on this, in that healthy living cells can be plucked directly from alpha's scalp with a tiny forceps. With these specimens, study is quicker and more exact. With the aid of ultrasonography to guide the instrument, doctors are also able to obtain blood samples directly from alpha at eighteen to twenty weeks of gestation for diagnosis of specific diseases or of general health and nutrition. In one 1977 case, tissue was taken from alpha to establish the identity of the father in a disputed rape charge. We are now able to do blood transfusions on alphas inside the uterus from twenty-two weeks on. Injections and direct therapy for such blood problems as hemolytic anemia are near and "intrauterine fetal surgery may become a reality within a few years," according to Jordan M. Phillips of the University of California College of Medicine at Irvine. Clearly, the technique needs refining, for there is a "complication" rate of 5 per cent to 10 per cent with fetoscopy, but it holds great promise. Because of this rate, fetoscopy is not used presently except on a clinical research basis where there is a strong therapeutic need.

Even without these new perinatal procedures, the basics of alpha's bodily form and function were well-known to human embryology at the time the U.S. Supreme Court issued its 1973 rulings, even though the rulings made no use of them. The data were detailed in a friend-of-the-court brief filed by a large group of anti-abortion physicians, and also in the main brief of the State of Texas, which sought to uphold its anti-abortion law. The same material is available in a number of books, including an excellent volume that is readily understood by non-specialists: *From Conception to Birth: The Drama of Life's Beginnings* (Harper & Row, 1971) by the late Roberts Rugh and Landrum B. Shettles.

The life processes begin at fertilization, when the sperm unites with the egg to create a unique genetic entity for each alpha that will never be repeated. After fertilization the growing cell cluster spends about three days in the Fallopian tube and three days in the uterine cavity before it begins burrowing into the wall of the uterus. The burrowing is called implantation.

Even before this, the cells start to organize themselves ("differentiation") as they multiply rapidly, and all the familiar bodily sytems and organs appear in subsequent weeks. Some highlights:

THE CARDIOVASCULAR SYSTEM

At day 14 after conception, occasional heart contractions can be perceived, at day 17 blood cells begin to develop, and by day 18, alpha's primitive heart has been known to begin its work. A better breaking point, however, is day 24, in the fourth week, when in each alpha the embryonic heart (then a simple tube) has started irregular pulsation. The heartbeat soon gains in force and regularity. In the old medicine, a patient was pronounced dead when both breathing and the heartbeat ceased, and if we apply this rule within the uterus, this would be the apparent point when alpha's "life" would be said to exist.

By approximately day 31 the heart has settled into rhythmic contractions, and the second heart valve has appeared (or will over the next few days). By five and a half weeks alpha's heartbeat has a general configuration similar to that of an adult and is sometimes traceable by electrocardiogram (EKG). Alpha by now is also pumping its manufactured blood through its own closed vascular system. In the sixth and seventh weeks the EKG shows all the typical heart phases that are recorded in an adult. It is at this stage that the beating of the heart also becomes visible through real-time scanning. Alpha how has a functionally complete cardiac system, readily observed by the doctor—before many women even seek tests to find out whether they are pregnant.

THE NERVOUS SYSTEM

With the development of artificial life-sustaining machines, an *ad hoc* committee at the Harvard Medical School proposed in 1968 a new definition of death to supplant the old heart-lung rule. The "Harvard Criteria," now widely accepted, are based upon a total lack of brain function. In my "Deeper into Abortion" article, I proposed these as an appropriate way to define the parameters of "life" at the other end of existence, within the uterus. There are four negative criteria in the Harvard test, each of which is required in order to establish death: no response to external stimuli (e.g., pain), no spontaneous movements or respiratory efforts, no deep reflexes, and no brain activity as indicated by a flat electroencephalogramm (EEG.)

The traditional medicine had it that there was no cerebral electrical potential in alpha through most of the nine months of gestation. This was discredited by 1951, the earliest study of which I am aware, by two researchers at Japan's Hokkaido University who did EEG tests on sixteen aborted alphas that ranged from three to seven months. They found electrical activity open to detailed graphing in the brains of the two three-month specimens (weighing only 26 grams and 38 grams), with fine waves superimposed on irregular slow waves. The four-month specimens showed a brainwave reaction to sleep-inducing and stimulant drugs that was almost the same as that in the adult. The researchers concluded that alpha's brain cells possess an ability to control states of consciousness from an early stage.

In the United States, EEG work received little attention until the studies of Bernstine and Borkowski in 1955, 1956, and 1959, which showed EEG tracings beginning at 43 to 45 days. They found that in these earliest graphs, alpha's sleep spindles were not unlike those during the sleep of adults, and later in pregnancy the response to sedatives, stimulants, and oxygen deprivation shown by EEG activity was also similar to that in the adult. In a 1964 paper read at the A.M.A. convention, Hannibal Hamlin of Massachusetts General Hospital applied EEG findings on alpha to the Harvard Criteria for death and stated: "At an early prenatal stage of life, the EEG reflects a distinctly individual pattern that soon becomes truly personalized." EEG research in utero became far more precise in 1969 with the development of

new and more sensitive electrodes. Because the line of birth has been made so important by the Supreme Court rulings, I should also mention the work of Lawrence Chik *et al.* at the Perinatal Clinical Research Center, Case Western Reserve University, showing that EEG activity in alpha's brain does not change abruptly at the time that birth occurs.

Turning to embryology, the ectoderm (the cells that will become the basis of alpha's nervous system) arises during implantation, and the system itself starts to form at day 18, which is why days 18—28 are termed the "neurula stage." By day 20 the foundations of the central nervous system, including brain and spinal cord, are established. By day 30, three parts of the brain are present, and the eyes, ears, and nasal organs begin to form. On day 31 the nerve root fibers in the primal spinal cord are visible and, on day 33, so is the differentiation of the cerebral cortex, the section of the brain that governs higher and more sophisticated activity.

By the sixth week, the five primary regions found in the adult brain are evident. As early as day 36, movements have been recorded on film, which means the primordial nervous system is stimulating the muscles. The earliest reflex arcs are established at day 42. Alpha's brain waves have been traced by EEG, as noted, as early as 43 days and are always readily discernible by the eighth week. In week 6 or 7 alpha responds to touch. Clearly, then, the parallel to the Harvard Criteria would establish the existence of alpha's life by the sixth week of gestation. Some sensory details from this period: At day 39 nerve fibers connect with the olfactory lobe of the brain, laying the basis for the sense of smell. In alpha's eyes, the nerve cells of the retina form at day 44, and nervous pathways connect the retina with the brain at day 48, though we do not know then alpha first "sees."

The Harvard Criteria may be established early, but the "consciousness" claimed by certain researchers is more difficult to evaluate. Some writers think that alpha's EEG waves have a low amplitude and a radomness that suggest rather low sensory imput. With present technology, we cannot say when "consciousness" occurs, but this is such a fluid term that it may defy exact biological definition. However, the attribute that *is* open to scientific study is the motions of alpha's body, which relate also to the brain's activity. It is not known exactly when the brain controls

bodily movements. Early twitching could be caused by reflex arcs before the brain is in command. The brain surely controls more fluid motions.

The layman's mental image of alpha is that of a curled-up body that looks inanimate—the "fetal position." The modern obstetrician, through realtime scanning, thinks of alpha as an active entity, reaching out, raising its head, scratching its nose, and engaging in many other patterns with an altogether lively look. In an extensive monograph in 1976, Reinhold (of Vienna) stated that the first motions—slight changes of position—can be seen by realtime scanning around the eighth (menstrual) week, but motions are insignificant till 10—11 weeks when they become increasingly prominent and extensive. Then Birnholz *et al.* at Stanford University reported motions "from early in the first trimester" with considerable twitching of the trunk and head beginning as early as 7 weeks, independent limb movements by 8—10 weeks, and more elaborate motions subsequently. My colleague, radiologist Samuel Madell, tells me that alpha's motions are visible even earlier, at the first stages at which current ultrasonography is able to pick up alpha.

By the twelfth embryological week, when brain structure is essentially complete, alpha is spontaneously able to kick its legs, turn its feet, curl and fan its toes, move its thumbs, make a fist, bend its wrists, turn its head, squint, frown, open its mouth, suck its thumb, swallow amniotic fluid, and make inhaling-exhaling motions (though air, of course, is not inhaled until birth).

SEXUAL IDENTITY

With the modern emphasis on sexuality in defining personhood, it might to worth mentioning this aspect. The sex of alpha is fixed at fertilization. By day 14, it can be verified immunologically by the researcher by testing for the H-Y (male differentiation) antigen on the surface of alpha's cells.

Alpha produces its own primitive germ (sperm and egg) cells at day 21, after which they migrate within the developing body. By day 38 they cease migrating and are located in the forming testes and ovaries; these germ cells will become fully mature at puberty. At day 42 the penis begins to form in the male alpha; the female sexual organs form later. By day 46 the gonads have differentiated to the extent that sex could be determined by microscopic examination if it were not already knowable through biochemistry. At this time the 600,000 potential ova of a lifetime already exist in the female alpha.

OTHER BODILY FEATURES

To serious researchers on the definition of "life" or "death," the important thing is not anatomy, the fact that the heart or leg is there, but the activity of the heart or leg and how it initiates or responds to stimuli. Nonetheless, the following highly selective list of bodily features will indicate how remarkably early the differentiation of cells and systems can be seen, even by today's crude technology, and how bodily structure neatly accompanies and complements the heart and brain developments.

Week 2—At day 11 to 13 the primitive streak appears; it marks the main axis of what will be the body.

Week 4—By day 28 there are building blocks for 40 pairs of muscles from the skull through the developing spinal column. The mouth is opened and lung buds and a recognizable liver are visible. By the end of the week (with the body a mere ¼-inch long) intricately organized cell groups are differentiated into the incipient muscular, circulatory, digestive, and skeletal systems.

Week 5—By now, if not earlier, the stomach, esophagus, and intestines are defined. Arms and legs appear. The face begins to "look human," which is why this is the earliest point at which embryologists apply the designation "fetus" to alpha.

Week 6—Here fingers and limb muscles begin. By the end of the week the primitive skeletal system is complete. At 6 weeks or so, the major organ systems have formed.

Week 7—Digestive juices are present in a developed stomach, all fingers exist (though not in final form), individualized patterns are visible in the ears of various alphas, transitional kidneys are extracting waste, and cartilage is changing into bone.

Danforth's *Obstetrics and Gynecology* (3d ed., 1976) defines differentiation as ending when all structures exist that are destined to be present at birth and fixed this at week 11 with the appearance of the nutrient artery of the long bone in the arm. By week 12, the close of the so-called "first trimester," alpha is a fully developed, functioning human body in merest miniature, 3 inches in length and tipping the scales at ½ ounce. Its fingerprints and sole and palm lines are now unique for each individual and remain for permanent identification throughout life. (The palm lines come first, appearing in individualized patterns in week 8.) Facial expressions are now also individualized.

What remains? The mother will experience movements of the body within her ("quickening") at 16—17 obstetrical weeks, but we know from modern biology that this age-old rule of thumb for life's existence is meaningless. Alpha's movements actually begin many weeks earlier. The major bodily developments yet to come are the extraction of oxygen from the air by the lungs (breathing) and the body taking nourishment and eliminating waste other than through the umbilical cord, along with changed routing of blood in the circulatory system. These steps occur at birth, approximately 266 days after conception or 280 days from the last period. That is, unless nature—or man—forces birth to occur earlier.

BIOCHEMISTRY

The most productive avenue through which we are currently increasing our knowledge of alpha is the study of its complicated physiochemical processes. Past discussions of alpha's "humanity" have emphasized its genetic makeup or bodily development, but this is where the riddle may be solved.

Recalling the dictionary definition of "life," it is from biochemistry that we know that alpha from its earliest stage is a responding and initiating entity, not simply "part of the mother's body," as the pro-abortion phrase goes. Daniel

Callahan summarizes the facts succinctly: "Genetically, hormonally and in all organic respects save the source of its nourishment, a fetus and even an embryo is separate from the woman."

Alpha's biochemical biography begins with implantation. The group of cells that will become the placenta produces hormones that enter the mother's bloodstream and prevent menstruation, now and throughout pregnancy. Otherwise, no life can develop and alpha will "miscarry" and be washed away into oblivion. It is absolutely the case that the great bulk of developments from implantation and beyond are initiated by alpha. It is thought that even the impetus for the start of labor comes from alpha when it is ready to leave the womb.

The mother is not aware of it, but her body fights against the "invasion" at implantation. It mounts an immune attack because of the different antigenic makeup of the two organisms, mother and alpha. The mother's body instinctively recognizes alpha as a foreign object to be repulsed, just as it does when an alien kidney is transplanted. Alpha thus is clearly—biochemically—an "other," distinct and immunologically different. Immune systems are exquisitely complex, individualized, and antagonistic to each other; in tissue transplant work, one must go through dozens of matchings to find a feasible "fit."

Biochemistry is the major way in which the obstetrician determines that alpha exists, by searching for the "pregnancy hormone" HCG (human chorionic gonadotropin). Beginning decades ago, pregnancy could be confirmed this way by eight menstrual weeks. In the old "A-Z" test, the mothers urine was injected in mice or other animals, which were then dissected to find signs of ovulation under the influence of the hormone from the urine. After I entered obstetrics, the animal tests were superseded by immunological tests. The most reliable method today, one in growing use, is "blood serum radio-receptor assay," a very sensitive and sophisticated test for HCG. With this method, refined in 1973, we can pick up this telltale biochemical signal of pregnancy at the time of implantation, just nine days or so after fertilization, even before the start of the next menstrual period would be due.

Rather early on, alpha develops its own defined endocrine system. The pituitary gland, a most important controller of

biochemistry, begins functioning between (embryological) week 5 and week 7. For the first 20 weeks the pituitary gland apparently operates on its own; then it is tied into control from the brain. ACTH, the hormone from the pituitary gland that stimulates the adrenal gland, reaches levels that we are already able to measure between week 8 and week 12. Alpha's pancreas is defined by week 5 and functions through most of pregnancy.

It is increasingly clear not only that these biochemical processes are extremely complex, but that alpha's effect on the mother is far less understood than the reverse. There is much public attention to the impact of the mother's drug taking or cigarette smoking upon alpha; far less to alpha's biochemical impact on the mother. This opposite aspect may become of vital significance to obstetricians, and at the moment, we can only guess at the complexity of these hormonal processes. If we can break the code, alpha will have a million messages for us.

While the Supreme Court, altering historical protections, defines the concept of "person" in order to permit the elimination of alpha, we in science are continually widening the concept of life. In the far reaches of our past history, paleontology is looking for the line that marks the human community off from non-humanity by studying primordial remains, the true-to-life equivalent of novelist Vercors and his "tropis." We are able to discover what these beings looked like and what they did; this is where the definitions are fixed scientifically. We will never know with certainty what their "consciousness" was. Meanwhile, in the far reaches of space, radioastronomy is listening for bleeps from beyond in an anxious search for other humanoid beings "out there" that may be transmitting their codes to us.

If "back then" and "out there," why not listen "in here," inside the human womb? We must expand our definition, our search for humanity, and technology and science are forcing us to do this. As yet the general public is incompletely informed, but eventually the research wing of medicine will pull society along with it. With alpha it is just as if an intelligent race of beings is transmitting massive electrical impulses from a distant star, and we are not receiving them . . . or we are refusing to receive them.

CERTIFICATE OF SERVICE

I hereby certify that as required by the Supreme Court Rules copies of the foregoing Brief Amicus Curiae were mailed, by first class mail, postage prepaid, to the following on the 26th day of July, 1982. I further certify that all parties required to be served have been served, through their counsel of record:

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